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Saturday, January 21, 2006

Estimating the value of favors

Ian Grigg's post on Bill Monk reminded me that I had written the following (excerpts from Measuring Value, with a few edits):

The value measurement problem is very broad. It comes into play in any system of exchange -- reciprocation of favors, barter, money, credit, employment, or purchase in a market. It is important in extortion, taxation, tribute, and the setting of judicial penalties. It is even important in reciprocal altruism in animals. Consider monkeys exchanging favors -- say pieces of fruit for back scratches. Mutual grooming can remove ticks and fleas that an individual can't see or reach. But just how much grooming versus how many pieces of fruit constitutes a reciprocation that both sides will consider to be "fair," or in other words not a defection? Is twenty minutes of back-scratching worth one piece of fruit or two? And how big a piece? And just how long is twenty minutes anyway? In some cases this is relatively easy to solve, as with the delayed barter of blood for blood in vampire bats. These bats can come home from a hunting mission either overstuffed or starving. Overstuffed bats can regurgitate blood to feed hungry ones. The grateful recipient can remember the favor an return it in a future hunting trip when the tables might be turned. And indeed, some degree of reciprocal trade takes place between vampire bats, even among non-kin.

Even this simple case of trading blood for blood, is, however, far more complicated then it seems. Just how do the bats estimate the value of blood they have received? Do they estimate the value of a favor by weight, by bulk, by taste, by its ability to satiate hunger, or other variables? Just the same, measurement complications arise even in the simple monkey exchange of "you scratch my back and I'll scratch yours".

For the vast majority of potential exchanges, the measurement problem is intractable for animals. Even more than the easier problem of remembering faces and matching them to favors, the ability of both parties to agree with sufficient accuracy on an estimate of the value of a favor in the first place is probably the main barrier to reciprocal altruism among animals.

It is also likely the most important barrier to exchange among humans. Many kinds of exchange, probably many more than most economists perceive, are rendered infeasible by the inability of one or both parties to the exchange to estimate its value. For most of human history, most kinds of markets that are possible today were not then feasible, in large part due to the inability of potential market participants to measure value: to estimate the value of the transaction to themselves and then use these estimates to discover

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Nick Szabo

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"Like most blogs worth my attention, this blog is updated only infrequently. That is because the authors of blogs worth my attention only post when they have something to say that is true, relevant and not already known by their audience. Most of the human race does not have the skill to know when an idea has these three properties. The skill is particularly rare in the fields of politics and economics, which is why this blog is such a rare and valuable thing." -- Richard Hollerith

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and agree on a common objective measurement. Measurement of value was and is also important to the development of many economic institutions related to markets. Accounting was crucial to the development of large companies and modern systems of taxation.

The process of determining the value of a product from observations is necessarily incomplete and costly. For example, a shopper can see that an apple is shiny red. This has some correlation to its tastiness (the quality a typical shopper actually wants from an apple), but it's hardly perfect. The apple's appearance is not a complete indicator -- an apple sometimes has a rotten spot down inside even if the surface is perfectly shiny and red. Yoram Barzel calls an indirect measure of value -- for example the shininess, redness, or weight of the apple -- a *proxy measure*. In fact, all measures of value, besides prices in an ideal market, are proxy measures -- real value is subjective and largely tacit.

Such observations also come at a cost. It may take some time to sort through apples to find the shiniest and reddest ones, and meanwhile the shopper bruises the other apples. It costs the vendor to put on a fake shiny gloss of wax, and it costs the shopper because he may be fooled by the wax, and because he has to eat wax with his apple. Sometimes these measurement costs comes about just from the imperfection of honest communication. In other cases, such as waxing the apple, the cost occurs because rationally self-interested parties play games with the observable.

Measures are critical components of institutions-- such as auctions, contracts, accounting systems, legal damage rules, tax rules, etc. -- that align incentives between parties who, prior to participating in the institution, have incompatible incentives. We can divide the measurement problem into two components -- the first, choosing the phenomena and units that will be measured, and second, measuring those attributes in a way that minimizes spoofing of the measure between parties whose incentives with respect to the value are misaligned.

Cost can usually be measured far more objectively than value. As a result, the most common proxy measures are various kinds of costs. Examples include:

(a) paying for employment in terms of time worked, rather than by quantity produced (piece rates) or other possible measures. Time measures sacrifice, i.e. the cost of opportunities foregone by the employee.

(b) most numbers recorded and reported by accountants for assets are costs rather than market prices expected to be recovered by the sale of assets.

(c) non-fiat money and collectibles obtain their value primarily from their scarcity, i.e. their cost of replacement.

Posted by Nick Szabo at 4:46 PM

5 comments:

Jim Estill said...

Interesting post. Phychological reciprocity is what it is called when a favour is offered that has no stated price. EG - I give you a t-shirt, you feel obligated to give me a gift - in 80% of the cases nicer than the one you received.

Businesses use this "obligation" all the time. "Free car cleaning", "Free evaluation" etc.

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The problem of course is that it does not always work.

8:55 PM

Mike Huben said...

"Cost can usually be measured far more objectively than value."

Is objectively the right word here?

Cost is value to me: isn't that subjective by definition? Your use of "value" is a function of how OTHERS would subjectively value something. It's relatively easy for me to know my own valuation (based on how much better off I am with the thing), but difficult to know the valuation of a community, which may depend upon supply, demand, and idiosyncrasy.

Maybe you want the word intersubjective?

It strikes me that once you get past animal-like subsistance (where value is based on calories, grams of protein, survival, and access to mates), all valuation is based on a foundation of sand.

The key to reciprocal altruism (and other exchanges) might be that the increased benefit is large enough that the measurement errors don't matter.

"As a result, the most common proxy measures are various kinds of costs."

I don't buy that, in many dimensions.

First, the most common proxy measure in use is valuation in monetary units, which generally is a potential cost to a purchaser and a value set by a seller (usually) above his costs. You can't have one without the other.

Second, how have you truly established that this is most common?

Third, any business measures inflows and outflows. Costs are (roughly) the former, but the latter are roughly the same or greater. Once they are all monetized, does it matter which has more entries in the ledger?

I think the real difference is that costs are generally historical, while value is hypothetical.

6:43 AM

Anonymous said...

Measurement costs are just one form of transactions costs. Potentially beneficial exchanges are often prevented by high transactions costs. Language, improved measurement systems, enforced legal frameworks, etc. all serve to reduce transactions costs and allow more of the potentially beneficial exchanges.

While direct costs - money payments - are easier to measure than values, full opportunity costs are not. Hard as it is to know the benefits of marrying Mr. or Miss X, it is impossible to know what other opportunities are given up by getting married now instead of 5 years from now. The same thing goes for a job, a college, a major in college, etc.

8:43 AM

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Hi
Thanks for putting such a nice blog out here for all of us to read.

Regards
lincoln cents

10:41 AM

Nick Szabo said...

Great comments from everybody, thanks.

"Objective" is often used to mean "intersubjective." For example, in law "the reasonable person standard" is what a reasonable person would do in a given situation. In practice what is "reasonable" is generally decided by a jury, so it is some consensus of the 12 very subjective opinions of the jurors. However, the law calls this an "objective" standard. Only when referring to a particular person's state of mind (e.g. proving "intent" for a crime)is it called "subjective."

Of course this is qualitatively different from "objective" in the sense of, say, a law of physics or judging time by the movements of the stars. So I agree so far that "intersubjective" would have been a better term.

However, there's another way costs are usually far more "objective" than many other kinds of value estimates: they are easy to verify. If A paid $X to B for a Widget, and A and B both recorded the transaction in their books, then (short of collusion between A and B to spoof the auditor) the auditor can verify the transaction actually took place. So we have some good evidence that a Widget is worth $X. (Or as Mike says, cost is historical rather than hypothetical).

Of course, cost is merely another proxy measure, not the value itself. But because of its auditability, it is usually the best proxy measure for most purposes, IMHO.

Some economists have mixed up costs that make good proxy measures (e.g. labor costs) with actual value in economic theories, and that certainly is a big mistake to be avoided.

Actual opportunity costs are very hard to measure, but at least for labor we have a good proxy measure of opportunity costs -- time. This is why paying somebody per hour (or per month while noticing how often a worker is around the office) is so very common. It's far cheapr to measure time, thus estimating the worker's opportunity costs, than actual value of output. (I discuss this more in my paper "A Measure of Sacrifice.")

Much of the advance of civilization has consisted in finding proxies that allow us to estimate with more accuracy and integrity more kinds of value.

10:46 AM

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